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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,677	06/26/2003	Glenn Mahony	9400-7	5379

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EXAMINER	
LI, SHI K	

ART UNIT	PAPER NUMBER
2613	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/606,677	MAHONY ET AL.	
	Examiner	Art Unit	
	Shi K. Li	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,7,8,11-14,16,17,19,20,24,32,33 and 35* is/are pending in the application.

4a) Of the above claim(s) *12-14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,7,8,11,16,17,19,20,24,32,33 and 35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 7, 17 and 19-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 7 recites the limitation "wherein a composite copper/fiber cable couples a host digital terminal (HDT) and the power source to the optical splitter and the ONU, respectively". Claim 7 depends on claim 1. Claim 1 recites the limitation "wherein a composite copper/fiber cable couples an optical line terminal (OLT) and the power source to the optical splitter and the ONU, respectively". Instant specification teaches in FIG. 3 that a composite copper/fiber cable couples an optical line terminal (OLT) and the power source to the optical splitter and the ONU. Instant specification teaches in FIG. 4 that a composite copper/fiber cable couples a host digital terminal (HDT) and the power source to the optical splitter and the ONU. However, nowhere does instant specification teach that an ONU is coupled to both an OLT and a HDT.

Similarly, claim 17 requires that an ONU being coupled to both an OLT and a HDT.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1, 8, 11, 16, 24, 32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldman et al. (U.S. Patent 6,577,414 B1) in view of Sala et al. (U.S. Patent 7,349,394 B2), Fitz (U.S. Patent 6,236,789 B1), Singer (U.S. Patent 5,606,555) and Dyke et al. (U.S. Patent 6,427,042 B1).

Regarding claims 1, 24 and 35, Feldman et al. teaches in FIG. 1 a passive optical network (PON). Feldman teaches in FIG. 6 a configuration for FTTH without interrupting legacy services where an optical splitter is coupled to home OEC (equivalent to ONT of instant claim) and a legacy transceiver (equivalent to ONU of instant claim) coupled to the same subscriber premises. Feldman teaches in FIG. 6 and add/drop device for separate wavelength channels $\lambda 1$ and $\lambda 2$ to/from legacy transceiver and $\lambda 4$ and $\lambda 3$ to/from OEC. One of ordinary skill in the art would have recognized that the splitters can be arranged in various ways. Sala et al. teach in FIG. 1 a PON where splitter 104 directly subtends a plurality of optical nodes (ON). Sala et al. teaches in col. 5, lines 26-27 that the ONs can be ONU, ONT or a combination of both. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange the splitter such that the splitter directly subtends the ONU and the ONT, as taught by Sala et al., in the PON of Feldman et al.

FIG. 6 of Feldman shows the splitter and the legacy transceiver close to each other. One of ordinary skill in the art would have interpreted this to mean that they are co-located.

The combination of Feldman et al. and Sala et al. fails to teach composite copper/fiber cable. Feldman et al. teaches in col. 7, lines 1-2 that the OEC is powered by the network. It is

understood that it means the power source is at a remote location and power is fed to the OEC via a distribution network. Fitz teaches in FIG. 2 a composite copper/fiber cable for distributing power and optical signal from a central office (CO) or headend to ONUs. One of ordinary skill in the art would have been motivated to combine the teaching of Fitz with the modified passive optical network of Feldman et al. and Sala et al. because generating power in a centralized location and distributing power via a distribution network is much cheaper, safer and more efficient than having power source at each ONU. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use copper/fiber cable for distributing power to ONUs from a central location, as taught by Fitz, in the passive optical network of Feldman et al. because generating power in a central location and distributing power via a distribution network is much cheaper, safer and more efficient than having power source at each ONU.

The combination of Feldman et al., Sala et al. and Fitz fails to teach a tree structure (i.e., one splitter is coupled to another splitter). Singer teaches in FIG. 1 tree architecture where a first splitter connects directly to ONU1 and also connects directly to a second splitter where more ONUs are connected. Such tree (or hierarchical) structure allows the distribution of ONUs in a large area with minimal fiber. One of ordinary skill in the art would have been motivated to combine the teaching of Singer with the modified PON of Feldman et al., Sala et al. and Fitz because a tree structure allows the distribution of ONUs in a large area with minimal fiber. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to cascading splitters, as taught by Singer, in the modified PON of Feldman et al., Sala et al. and Fitz because a tree structure allows the distribution of ONUs in a large area with minimal fiber.

The combination of Feldman et al., Sala et al., Fitz and Singer fails to teach a pole. Dyke et al. teaches in FIG. 1 street distribution comprising poles and drop fibers. One of ordinary skill in the art would have been motivated to combine the teaching of Dyke et al. with the modified PON of Feldman et al., Sala et al., Fitz and Singer because poles are owned by service providers and the installation of ONU on poles does not require acquisition of additional property. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to install ONU on poles, as taught by Dyke et al., in the modified PON of Feldman et al., Sala et al., Fitz and Singer because poles are owned by service providers and the installation of ONU on poles does not require acquisition of additional property.

Regarding claims 8, 11 and 32, it is understood from FIG. 1 and FIG. 6 of Feldman et al. that there are a plurality of ONUs and a plurality of ONTs. Furthermore Singer teaches a second ONU that provides communications for a second plurality of subscriber premises.

Regarding claim 16, Dyke et al. teaches in FIG. 1 a plurality of poles.

5. Claims 7, 17, 19-20 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldman et al., Sala et al., Fitz, Singer and Dyke et al. as applied to claims 1, 8, 11, 16, 24, 32 and 35 above, and further in view of Iglesia (R. Iglesia, "Service-Affecting Optoelectronic Failures in FITL Systems: Downtime, Repair Actions, and Maintenance Expenses", IEEE Journal on Selected Areas in Communications, Vol. 12, No. 2, February 1994).

Feldman et al., Sala et al., Fitz, Singer and Dyke et al. have been discussed above in regard to claims 1, 8, 11, 16, 24, 32 and 35. The difference between Feldman et al., Sala et al., Fitz, Singer and Dyke et al. and the claimed invention is that Feldman et al., Sala et al., Fitz, Singer and Dyke et al. do not teach a host digital terminal (HDT). Iglesia teaches in Table II that

the term HDT is used by Bellcore and the term OLT is used by ETSI. The terms HDT and OLT are equivalent. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the term HDT instead of OLT in the modified PON of Feldman et al., Sala et al., Fitz, Singer and Dyke et al. because these two terms are equivalent, as taught by Iglesia.

Regarding claim 33, Iglesia teaches in Table II that the HDT or OLT is located at a central office.

Response to Arguments

6. Applicant's arguments filed 4 February 2008 have been fully considered but they are not persuasive.

The Applicant argues "Feldman, Fitz and Iglesia, alone or in combination, do not disclose or suggest 'wherein a composite copper/fiber cable couples an optical line terminal (OLT) and the power source to the optical splitter and the ONU respectively,' as recited in Claim 1, in combination with other recitations therein." The Examiner disagrees. Fitz teaches in FIG. 2 a composite copper/fiber cable for distributing power and optical signal from a central office (CO) or headend to ONUs.

The Applicant argues "Feldman, Fitz, Iglesia and Singer, alone or in combination, do not disclose or suggest 'wherein a composite copper/fiber cable couples a host digital terminal (HDT) and the power source to the optical splitter and the ONU, respectively,' as recited in Claim 17, in combination with other recitations therein." The Examiner disagrees. Fitz teaches in FIG. 2 a composite copper/fiber cable for distributing power and optical signal from a central office (CO) or headend to ONUs. Iglesia teaches in Table II that the term HDT is used by

Bellcore and the term OLT is used by ETSI. The terms HDT and OLT are equivalent. Therefore, the combination of Feldman, Fitz, Iglesia and Singer teaches the limitation "wherein a composite copper/fiber cable couples a host digital terminal (HDT) and the power source to the optical splitter and the ONU, respectively".

The Applicant argues "Feldman, Dyke, Fitz and Singer, alone or in combination, do not disclose or suggest 'a second optical splitter that is positioned at the second pole and that interfaces the at least one of the second optical fibers to aerial fiber optic drops to ONTs located at respective subscriber premises on the first side of the street and a second side of the street,' as recited in Claim 17, in combination with other recitations therein." The Examiner disagrees. Dyke et al. teaches in FIG. 1 a PON distribution system having a plurality of poles. Dyke et al. teaches in FIG. 2 that each pole has a splitter for splitting a cable into four for serving four homes. FIG. 2 also shows aerial fiber 118 which is connected to O/E converter for each home. This is a FTTH arrangement and the O/E device is equivalent to ONT. It is common sense that poles are located on both sides of a street if the street has homes on both sides. Therefore, the combination of Feldman, Dyke, Fitz and Singer teaches the limitation "a second optical splitter that is positioned at the second pole and that interfaces the at least one of the second optical fibers to aerial fiber optic drops to ONTs located at respective subscriber premises on the first side of the street and a second side of the street" as recited in claim 17.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (7:30 a.m. - 4:30 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

skl
24 April 2008

/Shi K. Li/
Primary Examiner, Art Unit 2613